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14. ABSTRACT

Purpose: In Phase 1, focus groups were conducted with military nurses who treat combat-wounded patients and, separately, with combat-wounded patients. The aims of the study were to explore the lived experience of combat-wounded patients and the military nurses who care for them. In Phase2, the aims were for military nurses who treat combat-wounded patients to evaluate the web-based tailored cognitive/behavioral intervention called Stress Gym for its utility and effectiveness for their patients. The patients evaluated Stress Gym for a variety of factors, including utility and ease of use. **Design**: In Phase 1, the study was a qualitative phenomenological design. In Phase 2, the use of the intervention was a proof of concept design with military nurses and combat wounded patients in military medical treatment facilities (MTFs). **Methods**: In Phase 1, focus groups were conducted with military nurses and combat-wounded patients. In Phase 2, the nurses and patients logged on to Stress Gym, reviewed the 9 modules available, and completed a short evaluation of the website. **Sample**: In Phase 1, 20 military nurses participated, and 8 combat-wounded patients participated. There were 4 Air Force nurses, 8 Army nurses, and 8 Navy nurses. In addition, 4 Army patients and 4 Marine patients participated. In Phase 2, 124 military nurses and 5 combat-wounded patients participated. **Analysis**: In Phase 1, data were collected using descriptive phenomenological method. In Phase 2, data were analyzed using frequency and descriptive statistics, independent t-tests, one-way ANOVA, and correlation. **Findings**: In Phase 1, themes common to nurses and patients were coping, shared experiences, finding meaning, psychosocial nursing care, families and bureaucratic structure. Thematic differences were the patients' perspectives "changed self" while nurses described "professional boundaries." In Phase 2, the evaluations of the military nurses and patients were high. For the nurses there were 22 evaluation items in the Questionnaire (1= strongly disagree to 5= strongly agree) and 19 items had greater than 80% marks of Strongly Agree or Agree with median ratings on all items as 4. There were no significant differences in the evaluations from the 4 sites. In addition, there were no significant differences in evaluations scored based on the three military services (Air Force, Army, and Navy); males and females; ethnic/racial background; education level (some college to doctorate); deployed or not deployed before participating in the study. **Implications for Military Nursing**: In Phase 1, the importance of finding meaning presents ideas that could help nurses and patients cope better with stressful situations regardless of the setting. In Phase 2, strength of Stress Gym is that is enables all military members to learn about and get help with problems anonymously and in private. Stress Gym is versatile tools that can help nurses address the psychosocial needs of their combat-wounded patients by encouraging its use and including it in treatment protocols.

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Abstract

Purpose: In Phase 1, focus groups were conducted with military nurses who treat combat-wounded patients and, separately, with combat-wounded patients. The aims of the study were to explore the lived experience of combat-wounded patients and the military nurses who care for them. In Phase2, the aims were for military nurses who treat combat-wounded patients to evaluate the web-based tailored cognitive/behavioral intervention called Stress Gym for its utility and effectiveness for their patients. The patients evaluated Stress Gym for a variety of factors, including utility and ease of use..

Design: In Phase 1, the study was a qualitative phenomenological design. In Phase 2, the use of the intervention was a proof of concept design with military nurses and combat wounded patients in military medical treatment facilities (MTFs).

Methods: In Phase 1, focus groups were conducted with military nurses and combat-wounded patients. In Phase 2, the nurses and patients logged on to Stress Gym, reviewed the 9 modules available, and completed a short evaluation of the website.

Sample: In Phase 1, 20 military nurses participated, and 8 combat-wounded patients participated. There were 4 Air Force nurses, 8 Army nurses, and 8 Navy nurses. In addition, 4 Army patients and 4 Marine patients participated. In Phase 2, 124 military nurses and 5 combat-wounded patients participated.

Analysis: In Phase 1, data were collected using descriptive phenomenological method. In Phase 2, data were analyzed using frequency and descriptive statistics, independent t-tests, one-way ANOVA, and correlation.

Findings: In Phase 1, themes common to nurses and patients were coping, shared experiences, finding meaning, psychosocial nursing care, families and bureaucratic structure. Thematic differences were the patients' perspectives "changed self" while nurses described "professional boundaries." In Phase 2, the evaluations of the military nurses and patients were high. For the nurses there were 22 evaluation items in the Questionnaire (1= strongly disagree to 5= strongly agree) and 19 items had greater than 80% marks of Strongly Agree or Agree with median ratings on all items as 4. There were no significant differences in the evaluations from the 4 sites. In addition, there were no significant differences in evaluations scored based on the three military services (Air Force, Army, and Navy); males and females; ethnic/racial background; education level (some college to doctorate); deployed or not deployed before participating in the study.

Implications for Military Nursing: In Phase 1, the importance of finding meaning presents ideas that could help nurses and patients cope better with stressful situations regardless of the setting. In Phase 2, strength of Stress Gym is that is enables all military members to learn about and get help with problems anonymously and in private. Stress Gym is a versatile tool that can help nurses address the psychosocial needs of their combat-wounded patients by encouraging its use and including it in treatment protocols.

TSNRP Research Priorities that Study or Project Addresses

Primary Priority

Force Health Protection:	☐ Fit and ready force ☐ Deploy with and care for the warrior ☒ Care for all entrusted to our care
Nursing Competencies and Practice:	☒ Patient outcomes ☐ Quality and safety ☒ Translate research into practice/evidence-based practice ☐ Clinical excellence ☐ Knowledge management ☐ Education and training
Leadership, Ethics, and Mentoring:	☐ Health policy ☒ Recruitment and retention ☐ Preparing tomorrow's leaders ☐ Care of the caregiver
Other:	☐

Secondary Priority

Force Health Protection:	☒ Fit and ready force ☐ Deploy with and care for the warrior ☐ Care for all entrusted to our care
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Other:	☐

Progress Towards Achievement of Specific Aims of the Study or Project

Findings related to each specific aim, research or study questions, and/or hypothesis:

Military nurses are fighting their own battles to manage the number of combat casualties from Operation Iraqi Freedom and Operation Enduring Freedom. Service members' psychosocial needs for support to manage their stress and combat injuries are immense. Stress Gym, which was based on a cost-effective, paper-based intervention developed in our previous studies (Williams et al. 2004, 2007, 2010), was proposed as an internet-based, early intervention to help combat-wounded patients self-manage stress and depression. In Phase 1, we conducted focus groups with military nurses who treat combat-wounded patients and, separately, with combat-wounded patients. Results were used to tailor the Stress Gym internet intervention to the needs of combat-wounded patients. In Phase 2, military nurses who treat combat-wounded patients evaluated the tailored intervention to evaluate its utility and effectiveness for their patients. The patients evaluated Stress Gym for a variety of factors, including utility and ease of use.

Specific Aims

Therefore, the specific aims of this research project were:

Specific Aim 1
> Determine the competency needs of military nurses to provide psychosocial care to combat casualties to address their psychological wounds.

Specific Aim 2
> Further develop and modify the Stress Gym Internet intervention program as a specific intervention to assist these nurses to provide psychosocial care to combat casualty patients in the Navy, Air Force, and Army Military Treatment Facilities (MTFs).

Specific Aim 3
> Examine nurses' recommendation of Stress Gym for combat casualty patients in Navy, Air Force, and Army military MTFs, and evaluate the patients' ease of use, understanding, content, formatting, and motivation and intent to use the intervention.

Specific Aim 4
> Compare combat casualty patients' depressive symptoms, post-traumatic stress disorder symptoms and perceived stress levels before and after using the Stress Gym Internet intervention and the patients' evaluation of ease of use, understanding, content, formatting, time logged-in, and motivation and intent to use the intervention.

Findings, Outcomes, and New Knowledge

Phase 1

As discussed in Hagerty, Williams, Bingham, and Richard (2010), Phase 1 explored the lived

experiences of military nurses who care for the psychological needs of wounded service

members, and explored the lived experiences of wounded service members with respect to

nursing care of their psychological needs. We transcribed and analyzed information collected in

five focus groups with military nurses (Air Force, Army, and Navy) who cared for combat

casualty patients, and three focus groups with combat casualty patients (Army, Marines). Focus

groups were analyzed using phenomenological theme analysis. We modified the Stress Gym

Web site for combat-wounded patients to accommodate the input from the focus groups.

Seven major themes emerged from the nurses' focus groups.

Coping. This category included two subcategories: the situation or state the nurses were coping
with and the strategies they used to cope.

Shared experiences and belonging. Nurses described the importance of shared experiences in the
military and the impact of feeling valued for both them and the soldiers.

Meaning. Nurses attributed meaning to their experiences and the experiences of the soldiers, the
importance of having a perspective that values what they are doing.

Nursing care. Two subcategories emerged for this theme. First, nurses described the nursing care
assessment and intervention strategies they used in providing care to the wounded patients.
Second, they described reflection in practice, the professional and personal thoughts about what
they were doing as they provided nursing care and the impact of war they were seeing in the
patients.

Family. Nurses described their experiences and perspectives interacting with the families of the
wounded soldiers.

Boundaries. Nurses discussed the difficulty they were having delineating the boundaries of
professional care and the personal feelings they developed towards soldiers and their families.
They struggled with professional appropriate behavior in these circumstances.

Structure, bureaucracy. Nurses described issues regarding policies and structure of the military
and the health care system. They were concerned about many of the policies regarding wounded
soldiers but also expressed support for structures that helped them do their job.

Six major themes emerged from the focus groups conducted with combat casualty patients.

Coping. Patients described two sub-themes, the situations they were coping with and the strategies they used to cope. They described both adaptive and maladaptive coping strategies such as helping others versus being angry and out of control.

Shared experience and belonging. Patients commented on the importance of belonging to a group that had experienced similar situations. The camaraderie and importance of protecting one another was paramount.

Attribution of meaning. Patients reflected on why the injury had happened to them and on the meaning of what they had done serving their country.

Nursing care. Patients described their care from the nurses that addressed their pain, wounds, disabilities, symptoms, medications, and psychological trauma. Some thought that the nurses had provided psychological care whereas others did not; most were not clear about what it was the nurse could or should provide for psychological care.

System and structure. Patients had concerns about military and government policies and procedures that affected their ability to receive care and future assistance.

Family. Patients commented about the role of their families in their recovery, including positive support and negative impact.

The themes identified by nurses and patients were played out on multiple levels from the very personal to groups, to systems. The importance of shared experiences, finding meaning, and systems concerns were relevant to both types of participants. There were some discrepancies between nurses and patients about their perspectives on nursing care. Patients seemed unaware of what psychosocial care from nurses should be, what was appropriate, or what nurses should be providing. Nurses had multiple perspectives about the type of psychosocial care they were actually able to provide patients. A major issue for nurses was establishing appropriate boundaries between patients and professional care versus personal feelings and involvement. They were not clear as to how to handle these interpersonal situations. Both nurses and patients described a variety of adaptive and maladaptive coping strategies used to deal with traumatic situations and events. The findings from Phase 1 of the study directly influenced Phase 2 to develop the Stress Gym for Combat Casualty Patients intervention.

Phase 2

Phase 2 examined Specific Aims 3 and 4 to address the following research questions for the

nurses and combat-wounded patients.

For Nurses providing care to combat-wounded patients:

1.   What is the nurses' overall evaluation of Stress Gym for use with their patients?
2.   Do the nurses evaluate Stress Gym as easy to use, understandable, with content and format that motivate patients' use of the intervention?
3.   What is the nurses' total time logged-in on Stress Gym?
4.   What modules and how many modules are evaluated by the nurses?
5.   Is there a difference in the evaluation of Stress Gym with nurses who were deployed as compared to nurses who were not?
6.   Are there differences in the evaluation of Stress Gym between nurses in the Navy, Army, and Air Force MTFs?
7.   Are there differences in the evaluation of Stress Gym between military nurses, GS nurses, and contract nurses?
8.   Do years of experience, age, sex, nursing specialty, and years in the military predict the evaluation of Stress Gym?
9.   What do nurses like, dislike, and recommend for changes in Stress Gym?
10.   Do nurses see Stress Gym most helpful to their patients while in the hospital or during convalescence?

For Combat-Wounded Patients:

11.   What is the combat-wounded patients' overall evaluation of Stress Gym?
12.   Do the patients evaluate Stress Gym as easy to use, understandable, with content and format that motivate them to use the intervention?
13.   What is the total time logged-in by the patients using Stress Gym?
14.   Which modules are used by the patients?
15.   Are there differences in the evaluation of Stress Gym between patients in the Navy/Marines, Army, and Air Force?
16.   Are there differences in the evaluation of Stress Gym in the type of combat injuries the patients have sustained?
17.   Do age, sex, rank, education, years in the military, length of deployment, number of times deployed, depressive symptoms, and post-traumatic stress symptoms predict the evaluation of Stress Gym?
18.   Is there a change in the patients' degree of perceived stress from pre to post use of Stress Gym?
19.   What do patients like, dislike, and recommend for changes in Stress Gym?

Methods

Sample

There were 124 nurses who participated in the study. The sample comprised 14.5% (18) nurses

from Brook Army Medical Center, San Antonio; 52.4% (65) from National Naval Medical

Center, Bethesda; 21% (26) from Wilford Hall Medical Center, San Antonio; and 12.1% (15)

from Walter Reed Army Medical Center, Bethesda. The participants comprised 61% (72) active

duty, 5.9% (7) reservists, 24.6% (29) Government Service (GS) employees, 8.5 (10) contract

nurses and 6 nurses who did not indicate their service status. The active duty and reserve nurses

ranged in rank from Second Lt./ Ensign (O1) to Coronel/Captain (O6) and the GS nurses ranged

from GS1 to GS12. There was a significant difference in the number of men participating in the

Army MTFs as compared to the Navy and Air Force. In addition, there was a small significant

difference in the racial/ethnic background characteristics of the four MTFs. However, there were

no significant differences in age, mean number of years working as a nurse, mean number of

years in the military and mean number of deployments made by the military nurses. There were

50 nurses who were deployed with 24.2% being deployed once, 11.3% twice, and 4.8% three or

more times. For a complete breakdown see Table 1.

There were 5 combat-wounded patients who participated in the study, which limited the analysis

possible. There were 3 male and 2 female patients, whose ages ranged from 24 to 42. One patient

did not answer all the demographic questions, therefore the mean age of the four patients was

35.3 (SD=17.2). All indicated they were on active duty. They had been in the military service on

average for 14.5 years (SD=6.7). One patient was single and two were married. Their

ethnic/racial background was one African-American, one Caucasian, and two Other. They were

all from the U.S. Army, with 3 officers (rank Captain to Major; 0-3, 0-4) and one enlisted (E-4).

One had completed some college, and the others had completed college.

Table 1

Demographic and Background Characteristics of the Nurses (N=124)

Variables	BAMC	NNMC	WHMC	WRAMC	Test
Sex Male % (n)	38.9% (7)	16.9% (11)	28.0% (7)	57.1 (8)	X^2 (3) =11.1, ***p=.011***
Female % (n)	61.1% (11)	83.1% (54)	72.0% (18)	42.9% (6)	
Education					
Some college	5.9% (1)	1.6% (1)	0.0% (0)	7.7% (1)	X^2 (4)=164.6,
Associate degree	11.8% (2)	4.8% (3)	4.3% (1)	0.0% (0)	*p=NS*
Bachelor degree	47.1% (8)	54.0% (34)	43.5% (10)	76.9% (10)	
Master's degree	29.4% (5)	38.1% (24)	47,8% (11)	15.4% (2)	
Doctorate	5.9% (1)	1.6% (1)	4.3% (1)	0.0% (0)	
Ethnic/Race					
African-Amer.	11.1% (2)	11.1% (7)	4.5% (1)	42.9% (6)	X^2 (4) =25.1, ***p=.014***
Asian-Amer.	0.0% (0)	6.3% (4)	18.2% (4)	7.1% (1)	
White	72.2% (13)	77.8% (49)	72.7% (16)	42.9% (6)	
Hispanic	16.7% (3)	1.6% (1)	4.5% (1)	7.1% (1)	
Other	0.0% (0)	3.2% (2)	0.0% (1)	0.0% (0)	
Age Mean (SD)	36.4 (10.9)	39.3 (13.1)	36.2 (12.7)	42.9 (11.3)	F (3,119)=1.1, *p=NS*
Mean Years as a Nurse	10.1 (10.5)	16.6 (10.8)	13.6 (7.2)	11.7 (13.1)	F (3, 110)=2.3, *p=NS*
Mean Years in the Military	11.2 (9.3)	15.1 (9.0)	13.6 (6.2)	10.7 (7.4)	F (3, 83)=1.4, *p=NS*
Mean number of deployments	1.1 (1.9)	0.6 (1.2)	0.9 (.88)	0.27 (.46)	F (3, 120)=2.4, *p =NS*

The largest percent of specializations of the nurses were medical/surgical 34.2% (n=40),

intensive care units 20.5% (n=24), and operating room/perioperative 12.8% (n=15). The

remaining 32.5% (n=45) were in such areas as oncology, cardiology, psychiatry, and others.

The design of Phase 1 used a qualitative, phenomenological research design (Husserl, 1962). The

basic premise of phenomenology is to understand how individuals are living and making sense of

experiences that are unique to the individual (Burns & Grove, 2005). Nurses and patients

described their experiences with psychosocial care in focus groups. Data were analyzed using

Colaizzi's (1978) descriptive phenomenological method.

Stress Gym Web-based Intervention

Stress Gym's design was best suited for combat-wounded patients who experienced mild depressive or anxiety symptoms, or early stress symptoms (Williams, Hagerty, Yousha, Horrocks, Hoyle, & Liu, 2004; Williams, Hagerty, Andrei, Yousha, Hirth, & Hoyle, 2007). If they were having more serious symptoms, the patients could click on an icon on the Home Page that led them to resources where they could get immediate mental health assistance in their respective services. The icon also appeared on selected Web pages throughout Stress Gym. Assuming that no immediate mental health assistance was needed, patients completed any or all of the Stress Gym program modules, described in Table 2. Clicking on the name of any module in the navigation bar took them to the beginning of that module. Modules were written at the 8th-grade level for readability for enlisted personnel. Module navigation was by scrolling or clicking through simple interactive Web pages. Users had the option of selecting information, doing interactive exercises, watching animations, writing responses in text boxes, or graphing their stress levels. Their responses were saved, and were accessible when they subsequently accessed the program using their unique, self-generated, identification code. Upon completing any or all of the modules, participants were encouraged to complete the Evaluation Questionnaire and then log off. We were able to examine their responses because the program matched their data with

Table 2

Overview of the Modules in Stress Gym for Combat-Wounded Patients

Stress and Emotion	Individuals are given an overview of the Stress Gym and are introduced to recording their emotionality and stress levels using a graphing system.
Reacting to Stress	Specific strategies of stress reduction are described and users learn how they can implement these strategies. These include such strategies as deep breathing, counting, creating a picture or visualization, and using memory reminders such as "negative thoughts are energy burners and positive thoughts are energy earners."
Anger	In the focus groups in Phase 1, various manifestations of anger surfaced among combat casualty patients. In response, we have created a module to address issues of anger, including Expressions of Anger, Triggers and Coping, and Alcohol Use.
Change Your Thinking	Users examine distorted thinking. They review examples of distorted thinking such as ignoring the positive and focusing on the negatives, either-or thinking, over-generalization, perceiving that others are more successful, "should" statements, and labeling. This module identifies symptoms of depression and how the brain works with negative thoughts. The module also explains how selective serotonin uptake inhibitors (SSRI) helps treat depression and what to do if they experience suicidal thoughts. This module also provides information about Post-Traumatic Stress Disorder (PTSD) by an engaging game of PTSD Jeopardy. Patients do not want to be label with such a disorder, but need factual information.
Sleep	This module focuses on injuries and stress can interfere with sleep. Users identify strategies that can help them obtain adequate rest such as: going to bed at a regular time each night; refraining from exercise late in the evening since exercise can be physically activating, thus interfering with sleep; or not using alcohol for sleep.
Problem Solving	In this module, users practice the steps in solving a problem by going through an example of a gun-shot wound to the leg. Then they identify a specific problem of their own, and practice brainstorming possible solutions, narrowing their options, and identifying advantages, disadvantages, and barriers to potential solutions.
Belonging	In our work, we have found that increasing sense of belonging has significant effects on the psychological and social well-being of an individual (Hagerty, Williams, Coyne, & Early, 1996; Hagerty & Williams, 1999; Williams et al. 2002). Therefore, users review strategies to increase their sense of belonging. Topics include: belonging in the military; belonging and war injuries; strategies to increase one's sense of belonging; reacting and coping with issues of belonging; and finding resources to help.
Relationships	This module deals with relationships under stress, communication, new relationships, and support systems. It focuses on strategies to maintain healthy relationships.

Balance	This module helps users find balance in their lives. It examines the competing demands of deployment, work, or recovery, and the demands of family. The module provides strategies to assist them to learn how to balance competing and often conflicting demands.

The nurses focused on managing stress and depression, developing an awareness of the elements of interpersonal relationships, and dealing with specific health issues, such as sleep and alcohol use. The content in these modules was based on a data-based booklet format used in previous studies, and the pilot test of the Internet intervention program with Navy members. Data from these previous studies indicated the effectiveness of the booklet intervention in promoting positive behavioral outcomes for Navy recruits and an Internet intervention for Navy members at an MTF (Williams, et al., 2004, 2007; Williams, Hagerty, Brasington, Clem, & Williams, 2010).

Instruments

Nurse Measures. This nurse questionnaire examined nurse recommendations of Stress Gym for combat casualty patients in Air Force, Army, and Navy military MTFs, and their evaluation of the ease of use, understanding, content, formatting, motivation, and intent to use the intervention by patients. The first section comprised a 5-point, Likert-type scale (strongly agree to strongly disagree) of statements regarding their experience using Stress Gym. Examples included: "Stress Gym covers topics important to combat casualty patients." and "I would recommend Stress Gym to combat casualty patients." In the FICS for Sailors study (TSNRP N01-014) with Navy members based at the Naval Medical Center, Portsmouth, the Cronbach's coefficient alpha was 0.96 for the 16-item evaluation questionnaire (Williams, Hagerty, Brasington, Clem, and Williams, 2010). In Stress Gym for Combat-Wounded patients, the Cronbach's coefficient alpha reliability of the overall Evaluation Questionnaire 22-items scale was .97 and the subscales were .83 for Ease of Use; .94 for Understanding; .87 for Content; .88 for Format; .74 for Motivation;

and .89 for Intent to Use the Intervention. The second section allowed nurses to write comments

on the Web-based intervention, what they liked, disliked, and recommended for modification.

The final section included demographic information, including sex, age, marital status, and

racial/ethnic background. The questionnaire also included background questions, such as

rank/rate in the military, years in the military, deployment to or near a war zone, and length of

time deployed for the nurses. The questionnaire took about four minutes to complete.

Patient Measures. The single analog scale of the patients' perceived stress on a scale of 1 (no

stress) to 10 (extreme stress) was measured before using Stress Gym and after completion of the

Internet intervention. The analog scale is typically used to measure the intensity, strength, or

magnitude of individuals' subjective feelings (Waltz, Strickland, & Lenz, 2005). This type of a

single measure of intensity has been used extensively in pain and general health (i.e., Cella &

Perry, 1986; Good et al., 2001; Wells, Burnam, Rogers, Hays, & Camp, 1992). Reliability and

concurrent validity have been shown in the previous version of Stress Gym for the Navy

(Williams, et al., 2010).

The patients' questionnaire included combat-wounded patients' depressive symptoms, post-

traumatic stress disorder symptoms and perceived stress levels before and after using the Stress

Gym Internet intervention, and the patients' evaluation of ease of use, understanding, content,

formatting, time logged-in, and motivation and intent to use the intervention. The first section

comprised a 5-point, Likert-type scale (strongly agree to strongly disagree) of statements

regarding the patients' experience using Stress Gym. Examples were: "I like having the Virtual

Log to record my thoughts and feelings, and track my progress." and "Stress Gym helped me to

manage my stress and anger." The second section allowed patients to write comments on the

Web-based intervention, what they liked, disliked, and recommended for modification. The final

section included demographic information, including sex, age, marital status, and racial/ethnic background. The questionnaire also included background questions, such as type of injuries from combat, rank/rate in the military, years in the military, deployment to a war zone and length of time deployed. The questionnaire took about four minutes to complete. Included in the Stress Gym Evaluation Questionnaire was the Short Screening Scale for PTSD and Personal Health Questionnaire as described below.

Short Screening Scale for PTSD. This short seven-item instrument screens for PTSD symptoms. The seven items are scored by summing the positive responses (yes or no) with scores ranging from 0 to 7. Several examples of items include: (1) Did you avoid being reminded of this experience by staying away from certain places, people, or activities? (2) Did you begin to feel more isolated or distant from other people? The screening scale was tested on 237 VA patients in primary care. The scale had a test-retest reliability of 0.84 (p <.001). Validity measures using quality indices for cut scores of 4 (6.2), 5 (6.6), and 6 (6.6) were nearly identical, indicating that these scores maximized both sensitivity and specificity (Kimerling, et al., 2006). The distinct advantage of the instrument is its short administration, sensitivity and specificity and to help clinicians avoid the "Pandora's Box" of trauma assessment (Sugg, Inui, et al. (1992).

Personal Health Questionnaire (PHQ-2). The PHQ-2 is a very short measure used to assess the percent of patients screened positive for depression symptoms. The instrument asks the two criteria, one of which must be met to be diagnosed with Major Depressive Disorder according to DSM-IV (2000), including depressed mood or loss of interest in usual activities. The instrument was scored on the two items from 0 to 3 ranging from "not at all" to "nearly every day" with the total score ranging from 0 to 6 (Kroenke, Spitzer, & Williams, 2003). The probability of any depressive disorder with a score of 1 is 15.4 to 36.9%, and a score of 6 as 78.6 to 92.9%

(Thibault & Prassad-Steiner, 2004). A PHQ-2 score > or =3 had a sensitivity of 83% and a specificity of 92% for major depression. The likelihood ratio and receiver operator characteristic analysis identified a score of 3 as the optimal cut point for screening purposes. The construct and criterion validity of the PHQ-2 made it a useful measure for depression screening (Koren, Norman, Cohen, Berman, & Klein, 2005).

Procedures

Onsite PIs and research assistants at each MTF recruited nurses caring for combat casualty patients and worked with staff to identify combat casualty patients that met inclusion criteria. The only exclusion criterion for nurses were those nurses who had not cared for combat casualty patients. Exclusion criteria for patients were if the patient was unable to complete tasks or had physical injuries that prevented participation in the study; brain injury that exceeded a mild concussion; or diminished capacity that interfered with reading and completing the Stress Gym website modules. Exclusion criteria were evaluated by the staff if they believed that the patient did not have the ability to complete the Internet program and evaluation questionnaire.

The onsite PIs and research assistants had a laminated copy of the Stress Gym Home Page to point out aspects of it, including the Evaluation button to access the anonymous Evaluation form, to potential participants. They were also given a CD with selected pages of the website to demonstrate. The nurses and combat -wounded patients were informed that they would participate as volunteers, and they were not required to complete Stress Gym. Combat-wounded patients were asked to evaluate the website for its feasibility and utility. Nurses reviewed the same website as the patients, but were asked to evaluate it for its feasibility and utility as a tool for their patients. Participants were given a login card with instructions for how to access the secure website that contained the Consent Form and all the informational and interactive Web

pages for Stress Gym. To protect the program from use by other than study participants,

research assistants in each military MTF gave participants an invitation code to access the

Consent Form. After reading the online Consent Form, participants indicated if they were willing

to participate by indicating yes or no. If they clicked on "no", then they were thanked for their

consideration and the program ended. If they clicked on "yes", then the program took them to a

page to where they created an unique identification code known only to them that allowed them

to access the Stress Gym program at any time.

By using their unique identification code to login, participants remained completely anonymous.

There was no way to identify a subject. No names or e-mail addresses were required or collected

for the study. This procedure was approved by IRB and used successfully in the pilot test of the

Stress Gym website in FICS for Sailors: Follow-Up Intervention Coping Strategies (Williams et

al, 2010), the study that immediately preceded the Stress Gym study. Stress Gym for Combat

Casualty Patients was approved for the protection of human subjects by University of Michigan

IRB, the National Naval Medical Center (NNMC), Bethesda, IRB, and for the Federal Wide

Assurance Addendum by the Navy Bureau of Medicine and Surgery (BUMED), Wilford Hall/

Brook Army Medical Center (BAMC), and the Walter Reed Army Medical Center (WRAMC)

IRB.

Results

Nurses Who Cared for Combat Wounded Patients. An evaluation of Stress Gym was provided by

124 nurses who completed the Evaluation Questionnaire at the completion of their review of the

website. On average, the nurses who participated in the study were logged-on Stress Gym for

36.1 minutes (SD=41.1 minutes). There were no significant differences for time logged-on in

the four sites that participated (F (3, 120) =1.15, $p=NS$). There were 22 evaluation items in the

Questionnaire and 19 items had greater than 80% marks of Strongly Agree or Agree (see Table 3). There were no significant differences in the evaluations from the 4 sites using Chi Square (p=NS) and totaling the 22 items to create a total evaluation score using ANOVA (F (3, 114) = 1.32, p=NS). In addition, there were no significant differences in evaluations scored based on the three military services (Air Force, Army, and Navy), (F (2, 113) = .047, p=NS); males vs. females (t (122) = 0.24, p = NS); ethnic/racial background (F (4, 112) = 1.39, p=NS); education level (some college to doctorate) (F (4, 111)=0.16, p=NS); deployed or not deployed before participating in the study (t (122) = 0.25, p=NS). There also were no significant differences by military service, sex, ethnic/racial background, education level, and deployment in the six categories of the Evaluation Questionnaire, comprising Ease of Use, Understanding, Content, Format, Motivation, and Intent to Use the Intervention. The correlation matrix of the subscales of the Evaluation Questionnaire were all strong significant correlations ranging from r =.74 to r = .84.

Table 3

Stress Gym for Combat-Wounded Patients: Nurse Evaluations (N=124)

Evaluation Items	SD % (n)	D % (n)	N % (n)	A % (n)	SA % (n)	Mean (SD)
Ease of Use						
I like that Stress Gym is on the Internet, always available whenever patients need it.	0.8 (1)	0.0 (0)	5.7 (7)	39.3 (48)	54.2 (66)	4.5 (.68)
I like that Stress Gym lets patients work at their own pace and on any strategy they wish.	0.8 (1)	0.0 (0)	7.3 (9)	39.0 (48)	52.9 (65)	4.4 (.70)
Stress Gym is easy to navigate.	0.8 (1)	2.4 (3)	8.1 (10)	52.8 (65)	35.9 (44)	4.2 (.76)
Stress Gym is organized so that it makes sense to me.	0.8 (1)	3.2 (4)	9.7 (12)	54.8 (68)	31.5 (39)	4.1 (.78)
Understanding						
I think that patients can learn at least one strategy to help them manage stress.	0.8 (1)	0.8 (1)	6.5 (8)	52.0 (64)	39.9 (49)	4.3 (.70)
Stress Gym can help patients to understand how they respond to stress.	0.8 (1)	2.5 (3)	9.0 (11)	53.3(65)	34.4 (42)	4.2 (.76)
Stress Gym can help patients to understand how they respond to anger.	0.8 (1)	2.4 (3)	9.8 (12)	54.5 (67)	32.5 (40)	4.2 (.76)
Content						
Stress Gym covers topics important to combat wounded patients.	0.8 (1)	0.8 (1)	6.5 (8)	42.7(53)	49.2 (61)	4.4 (.72)
Stress Gym can be helpful to military personnel injured in combat.	0.8 (1)	0.8 (1)	14.9 (18)	45.5 (55)	38.0 (46)	4.2 (.78)
Stress Gym covers topics important to nurses who care for combat wounded patients.	0.8 (1)	0.8 (1)	13.0 (16)	44.7(55)	40.7 (50)	4.2 (.77)
Stress Gym can help me to provide care to my combat wounded patients.	0.8 (1)	2.4 (3)	13.8 (17)	56.9 (70)	26.1 (32)	4.0 (.76)
Format						
I like that Stress Gym is private.	0.8 (1)	0.0 (0)	9.7 (12)	39.5 (49)	50.0 (62)	4.4 (.73)
I like that Stress Gym lets patients print visual reminders.	0.8 (1)	0.0 (0)	9.1 (11)	40.5 (49)	49.6 (60)	4.4 (.72)
I like that the Virtual Log lets patients record their thoughts and feelings, and track their progress.	0.8 (1)	0.0 (0)	9.8 (12)	36.6 (45)	52.8 (65)	4.4 (.73)
I like that Stress Gym is interactive, not just a lecture.	0.8 (1)	1.6 (2)	7.3 (9)	41.9 (52)	48.4 (60)	4.4 (.76)
I like the animations in Stress Gym.	1.6 (2)	6.5 (8)	20.2 (25)	48.3 (60)	23.4 (29)	3.9 (.91)
Motivation						
I like that Stress Gym gives patients directions to seek professional help if they need it.	0.8 (1)	0.8 (1)	6.6 (8)	47.5 (58)	44.3 (54)	4.3 (.71)
Stress Gym is fun even though it's serious work.	1.7 (2)	8.3(10)	16.7 (20)	50.0 (60)	23.3 (28)	3.9 (.93)
The first page of Stress Gym is interesting and gets the attention of patients.	1.6 (2)	4.1 (5)	23.6 (29)	54.4 (67)	16.3 (20)	3.8 (.82)
Intent to Use the Intervention						
I would like to see Stress Gym available to all combat wounded patients and the nurses who care for them.	0.8 (1)	0.8 (1)	13.8 (17)	44.7 (55)	39.9 (49)	4.2 (.77)

Evaluation Items	SD % (n)	D % (n)	N % (n)	A % (n)	SA % (n)	Mean (SD)
I would recommend Stress Gym to combat wounded patients.	0.8 (1)	4.1 (5)	9.8 (12)	51.2 (63)	34.1 (42)	4.1 (.81)
Stress Gym could help friends or family members to understand what patient experience.	0.8 (1)	3.3 (4)	12.4 (15)	50.4 (61)	33.1 (40)	4.1 (.81)

The number of activity modules, such as Stress and Emotion and Problem Solving, completed by

the nurses had a mean 2.0 modules (SD=1.7). However, all the nurses reviewed some of the sub-

modules within modules. The first module, Stress and Emotion, was reviewed and completed by

nearly 80% of the nurses. See Table 4 for the frequency and percentages of the modules

reviewed. There were no significant differences in the number of modules completed by the

nurses at the 4 MTFs (F (3, 67) = 2.42, $p = NS$). A multiple linear regression of years of

experience, age, sex, nursing specialty, and years in the military did not predict the evaluation of

Stress Gym (F (5, 82) = 0.20, $p=NS$). Fewer than one-third of nurses (29.8%, 37) recommended

that Stress Gym be used for their patients during hospitalization. Almost two-thirds (63.7%, 79)

recommended its use during convalescence/outpatient treatment.

Table 4

Review of Modules in Stress Gym by the Nurses (N=124)

Modules	Reviewed Entire Module % (n)	Reviewed Sub-modules % (n)
Stress and Emotion	79.0 (98)	21.0 (26)
Reacting to Stress	65.3 (81)	34.7 (43)
Anger	59.7 (74)	40.3 (50)
Changing Your Thinking	53.2 (66)	46.8 (58)
Sleep	49.2 (61)	50.8 (63)
Balance	45.2 (56)	54.8 (68)
Problem Solving	40.3 (50)	59.7 (74)
Belonging	0 (0)	57.3 (71)

Participants were asked to comment on what they liked most in Stress Gym, what they disliked,

and what they would change to make Stress Gym better. Out of the 124 nurses who participated,

109 made comments. The most frequent comment made about what they liked was the

interactivity of the modules within Stress Gym. As an example, one nurse wrote:

> The interactive quality and ability to look at different areas of the site without
> limitations; being able to self-pace and choose items that are more meaningful at
> any point in a person's recovery will increase the likelihood that they will come

back if they can look at the topics that are important to them at any given time
without forcing topics on them that may be too uncomfortable at a specific time. It
is also a good way for casualties to be able to evaluate themselves without someone
hanging over their shoulder judging them about their feelings and needs.

Another nurse stated: "I like that it is incredibly visual and interactive. At first I thought

that it was simply a click and read lecture, but the visuals and animations were very

effective." Many of the nurses commented liking specific modules and features such as

PTSD Jeopardy, Ant and Boot animation, stress log, and the program's ability to maintain

a virtual log of patients' interaction and journaling features in privacy.

The theme of comments that were most frequently mentioned by the nurses were they

disliked "nothing" or that the program was "too long." However, as one nurse indicated, "I

think the modules were a good length, but I could see that when patients are in the hospital

and not entirely focused they might find Stress Gym modules to be long. Patients might

need some encouragement to work on a little bit each day." Some nurses disliked the clip

art and preferred to see actual pictures "of nurses and active duty personnel. The

animation takes away from the military flair of the site."

The most common theme for recommendations to make Stress Gym better was "Nothing--

A great program!" Another common theme was, "Just more real photos of our wounded

warriors and our nurses at the bedside with these patients. Also more shots of our warriors

in every day settings back in the states like walking down the street with their family."

Four nurses recommended a section on caregivers. As one nurse emphasized:

> There is an incredible amount of stress and difficulty for both the medical
> staff and the family members who provide care for casualties.   A lot of this
> information would be good for them to see, to give a little perspective, but a
> section especially for the caregivers as well would make this a totally
> awesome sight all around. Allowing caregivers to see what tools are there for
> their patients or loved ones with a little reminder that they are hurting and

        stress out as well would benefit everyone. I have been taking care of
        casualties in one form or another for 12+ years now and I am seeing the stress
        reaction in myself change as I am affected by the attitudes and issues of both
        the casualties I care for and their family members.

Combat-Wounded Patients. All the patients had been deployed once during the injuries, and two

described their injuries as "shrapnel wounds from an 82 mm mortar round" and "PTSD." They

were injured between 2004 and 2010. The median scores on each of the Evaluation

Questionnaire items was 4.0, which means that the patients "Agreed" with the Ease of Use,

Understanding, Content, Format, Motivation, and Intent to Use the Intervention. The most

frequent modules reviewed by the patients were Stress and Emotion, Anger, and Changing your

Thinking.

The patients' responses on the Short Screening Scale for PTSD produced a mean 5.50 (SD=1.0)

and a median 6, with scores ranging from 4 to 6, indicating positive screening for symptoms of

PTSD (Kimerling, et al. 2006).   The Personal Health Questionnaire (PHQ-2) (Kroenke, et al.,

2003) screening of depression had a mean of 3.80 (SD=2.59) and a median of 4, with scores

ranging from 0 to 6, indicating depressive symptoms that could the meet criteria for major

depressive disorder.

On a scale from 1 to 10 indicating increase perceived stress levels, four of the patients rated their

stress level from 4 to 7. Only three patients provided their perceived stress levels at the

completion of Stress Gym; two patients indicated a decrease by 2-points (5 to 3; 7 to 5) and one

patient indicated no change (4 to 4). There were too few patients to conduct analysis for their

evaluations of Stress Gym to predict their scores of PTSD symptoms and depression symptoms.

Three of the 5 patients wrote comments on what they most liked about Stress Gym: "pace";

"ways on how to deal with stress"; and "it is easy to understand." They disliked: "computer

work"; "N/A, was overall very helpful"; and "Overall it's good, some content is hard to do due to TBI issues." One recommended adding more video, and another stated, "I think it is good."

Relationship of current findings to previous findings:

The wars in Iraq and Afghanistan have helped to highlight the association of physical injuries and psychological problems (Koren, Norman, Cohen, Berman, & Klein, 2005). Data have indicated that exposure to combat has psychological ramifications (Hoge, et al., 2004), and contributes to major depression, anxiety, and PTSD among other problems (Hoge, Auchterlonie, & Milliken, 2006; Tanielian & Jaycox, 2008).

The focus groups conducted in Phase 1 of this study reveal that psychosocial factors, such as having a sense of belonging which we first highlighted in the study Factors Associated with Depression in Navy Recruits (1996), and then in subsequent studies (BOOTSTRAP (1998-2001), and STARS (2001-2004), can be critical to help military members at risk for mental health issues. In the study FICS for Sailors: Follow-up Intervention Coping Strategies (2004-2009), we addressed the needs of military members in the Navy, creating and testing the self-help intervention website Stress Gym. In Phase 2, we used a tailored version of the Stress Gym website to address the specific needs of combat-wounded patients across all of the services, Air Force, Army, and Navy/Marines. Further, the issues of psychosocial care for patients may be relevant to both military and non-military nurses in traumatic situations generally (Hagerty, et al., 2010). A brief summary of each of the previous studies is illustrated in Figure 1. For additional details of each of the studies, see Table 5.
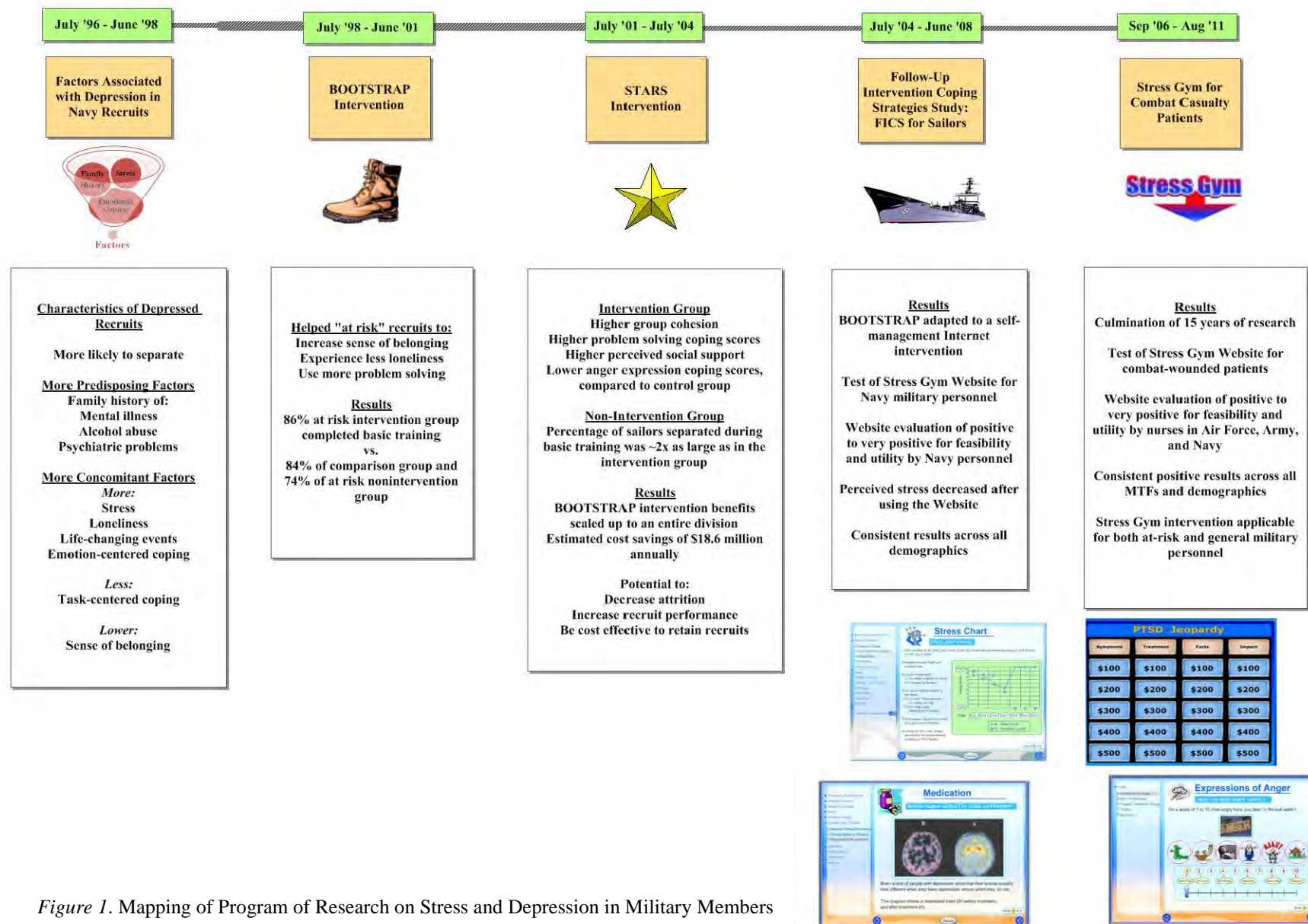
Figure 1. Mapping of Program of Research on Stress and Depression in Military Members

Table 5. Summary of Previous Studies

Factors Associated with Depression in Navy Recruits, 1 Jul 96-30 Jun 98 (Williams et al., 2002)	We examined predisposing and concomitant factors related to Navy recruit basic training with 443 recruits, 200 with depressive symptoms and 243 matched comparison subjects. We found that depressed recruits were more likely to be separated from the Navy and not complete training, had significantly more predisposing factors than comparison recruits, including family history of mental illness, family history of alcohol abuse, and history of psychiatric problems, and had significantly more concomitant factors such as higher levels of stress, more loneliness, more life change events, lower sense of belonging, more emotion-oriented coping, and less task-oriented coping.
BOOT STRAP Study, 1 Jul 98-30 Jun 01 (Williams et al., 2004)	Recruits at-risk for depression were randomly assigned to a cognitive/behavioral intervention for reducing risks associated with depression and stress or a non-intervention group. These two groups were compared to a third comparison group of recruits who received no intervention and were not at-risk for developing depression. Percentages of recruits in the study successfully completing basic training were 86% of the Intervention group, only 74% of the non-intervention group, and 84% of the comparison group. Recruits at-risk for developing depression and who received the Intervention had significantly fewer transfers or separations from the Navy.
STARS Project, 15 Jul 01-14 Jul 04 (Williams et al., 2007)	Compared the results from a randomly assigned division of recruits who received the BOOT STRAP intervention to the results from a division of recruits who did not receive the intervention. The intervention group developed significantly higher group cohesion, higher problem solving coping strategies, and higher perceived social support, while reporting less anger expression coping strategies than the control group. Potential cost savings per year on recruit training were estimated to be $18.6 million. Training facilitators and conducting the group intervention would cost an estimated $1.5 million per year. Additional, those sailors that successfully completed basic training were followed after two years in the fleet. The intervention sailors had a 1% higher rate of remaining in the Navy as compared to the Controls.
FICS for Sailors: Follow-up Intervention Coping Strategies, 15 Jul 04-14 Jul 09 (Williams et al., 2010)	Built upon our previous studies by tracking those sailors who participated in our BOOT STRAP Study and STARS Project. In addition, we pilot tested an adaptation of our intervention, called Stress Gym, for use on the Internet to help address the psychosocial needs of all military members. (Williams, et al 2010). This Internet intervention then served as the foundation for a followup Website intervention adapted specifically for combat casualty patients in the study Stress Gym for Combat Casualty Patients.

In summary, over the past 15 years, our program of research has focused on stress and depression in military members. Study results have provided evidence for the success of our paper-based approach to help recruits and active military with mental health issues, to aid in the retention of military personnel, and to save on expenses. One of our recent studies has provided evidence that this success can be extended to a Web-based intervention for military personnel generally. Finally, in the Stress Gym for Combat Casualty Patients study, evaluations by nurses

who care for combat-wounded patients suggest that the Stress Gym website tailored for combat-wounded patients may be effective as well.

Effect of problems or obstacles on the results:

Delays by the military IRBs in processing paperwork, including IRB and CRADA reviews and approvals, at three of the four study sites hindered subject recruitment and compromised the success of this study. The delays precipitated requests for two, one-year study extensions. The delays were not associated with the protection of human subjects; rather, they were related to slow processing of our requests at the military sites themselves. In one example, a CRADA was under review in the legal department of one military site for 9 months even though the signed agreement amounted largely to an exchange of contact names and addresses. In another example, Military IRB approval at a study site took over one year. Approval was received when the IRB involved simply deferred to an approval received by the study almost a year earlier from another study site.

Other obstacles can be attributed to: the heavy workload of the onsite PIs at the study sites; the turnover of PIs and support staff at each of the study sites because of retirements, redeployments, transfers to other duties, and the delays in study approvals mentioned above; the IRB paperwork associated with all of the changes in study personnel. It is also possible that staff turnover and delays in paperwork approvals prevented staff at the study sites from building trusting relationships with patients at the study sites that research suggests can aid recruitment (Berger, Neumark, & Chamberlain, 2007;   Center for Information and Study on Clinical Research Participation [CISCRP], 2011; Corbie-Smith, Thomas, Williams, & Moody-Ayres, 1999; Gemmill, Williams, Cooke, & Grant, 2010; Kass, Sugarman, Faden, & Schoch-Spana, 1996; Sung, Crowley, & Genel, 2003; Raisch, Campbell, Sather, Warren, & Segal, 2007).

The small number of combat-injured patients who participated is likely the single most

significant impact on the study.

Limitations:

Several limitations existed in the study. Given the number of nurses who provided care to

combat wounded patients, many chose not to participate in the study. One reason may be their

sense of duty to the seriously injured patients that they treat and patient families. While the

Stress Gym evaluation can easily be completed in less than an hour, they may be unwilling to

take even that time away from patient care. Another possible reason is that they do not feel

strongly about contributing to nursing research.

The limited participation by patients is a limitation and concern for this type of study. For

example, asking a patient with serious injuries to participate in research may be asking too much.

One research associate reported that as she went into a patients room she asked "How's it

going?" to engage the patient and assess his willingness to participate. He responded "How do

you think it's going with 3 limbs missing?" She decided then that to ask him to participate in a

research study was surreal.

A current trend towards of involvement of patients is to call it "training" when they are told to

complete a questionnaire and evaluation. This may suggest the Stress Gym would be better

utilized as a treatment strategy in which a as part of a treatment plan health care provider would

assign patients to complete specific modules of Stress Gym.

Conclusion:

Most of the demographic background characteristics were similar in comparing the 4 MTFs.

However, there were significant differences in sex and racial/ethnic background. For reasons

unknown, more males participated in the study from WRAMC and BAMC than the other two

MTFs. Yet there were no significant differences in the evaluation of Stress Gym based on sex.

Similarly, the racial/ethnic background of WRAMC is significantly different from the other 3

MTFs. Again, however, there were no significant differences among the evaluations based on

racial/ethnic background among the study sites. It is worthy to note that nurses tended to review

the modules that dealt with the emotional aspects of stress.

The average time logged on provides evidence that the website is reasonable for participants

examining the modules they select. The length of time is similar to that reported in Williams et

al. (2010). There were no differences for time logged on based on the demographics.

The comments of nurses on their likes, dislikes, and recommendations were also encouraging.

One of our goals was to use interactivity to make the website different and more useful to

participants than many existing Websites. Therefore, the positive comments by nurses on the

interactivity of the website were consistent with the design. The comment that they disliked

"nothing" also provided encouragement. Comments that the website was too long may have been

due to our not emphasizing enough that the website was not designed for one-time use. Rather, it

was designed to be used as often as needed, and the modules visited by users could vary over

time according to a user's individual needs. In part because of this, Stress Gym was capable of

saving user responses for later reflection and updating. Nonetheless, their comments indicated

that we need to be more clear when we specify these capabilities of the program.

Their suggestion that we use more photos of "real" soldiers and of nurses at a soldier's bedside is

noteworthy. Because of our limited research budget, we attempted to draw upon websites that

had available military-themed photos. Our challenge was to find photos that were congruent with

content. In the future, a research budget to help develop the website could include contracting

with a photographer that would fit the content specifically within modules of the website, thus increasing congruency.

The recommendation to include a section on caregivers has merit. In our previous research study (Hagerty, et al., 2010) in Phase 1, nurses identified the importance of the involvement of the family as well as the burden that family members placed on nurses who care for their loved ones. By addressing the stress associated with injuries and behavioral outcomes, the website has the potential to help families understand what their injured family member is going through. This holds the potential of helping family to know better how to provide support to the patient. Nurses were asked when Stress Gym could best be used by patients. Over half suggested when patients were convalescing. This was our intent when we designed the program. The disappointing, small number of patients reflected the complexity in timing when and how the website is introduced to patients. When patients are hospitalized, they are often managing acute pain of injuries, or are in a confused state because of an IED injury and/or traumatic brain injury. Therefore, only a select group of patients may be appropriate to use Stress Gym during hospitalization. As outpatients, they are often overwhelmed with appointments, procedures, wound care, rehabilitation, and related activities. Therefore, asking patients to participate in a study may not be successful at this time either. The need to make Stress Gym part of the treatment protocol may be warranted to make the intervention available to them when they are ready to use the information and tools built into the program.

Despite the few number of patients who participated, their scores on the questionnaire were encouraging because their Evaluations were similar to those of the nurses who care for them. However, despite advances in technology and medical treatments that increase the survival rates of patients with even severe physical injuries, their evaluations suggest that we should still be

concerned because of their high scores for Depression and PTSD, suggesting the importance of

providing not only for their physical care but also for the unseen wounds to their brain and

mental health. It is possible that for them the emotional fallout of war remains undertreated.

Surprisingly, the patients who were willing to participate in the study did not necessarily

represent the usual soldier injured in the war. They were older with more years of being in the

military service, three being officers, and more educated. Recent statistics on the 6,036

casualties in Afghanistan and Iraq indicate that 53% were under 24 years old (Altchek, 2011).

Given both the ages of the patients who evaluated Stress Gym and their scores on the screening

for PTSD and depression, concern remains about the psychological impact of war in these

individuals and possibly others like them. Although the number of patients who participated in

Stress Gym is exceedingly small, their responses do highlight the need to help any person injured

in combat situations despite recent calls for hardiness, resiliency, and positive thinking by

military personnel (National Public Radio [NPR], 2009; Cornum, Matthews, & Seligman, 2011).

In addition, there were mid-grade officers who lead other troops, an often hard to reach

population with limited time for appointments for mental health concerns. Further, one of the

main obstacles to military personnel seeking mental health treatment is because many service

personnel believe that anyone who admits to mental health problems may harm their careers,

lose the respect of their fellow troops, and in the case of officers, lose the confidence and respect

of the troops they lead (Tanielian & Jaycox, 2008). A significant strength of Stress Gym is that it

enables all military personnel, including officers, to learn about and get help with problems

anonymously and in private.

Overall, the results on the 22-item evaluation questionnaire were encouraging. Participants reported that the website was easy to navigate and understandable, with content and format that motivated them to use the intervention. It is encouraging that, unlike other interventions, Stress Gym does not seem to suffer from a lack of content that is engaging and relevant (Christensen, Griffiths, & Korten, 2002; Prescott, 2001). There were no statistically significant Chi Square differences in the evaluation of Stress Gym based upon sex, rank, specialization, race/ethnic background, or whether or not participants had been deployed to or near a war zone. This study builds upon our previous research (Williams, Hagerty, Yousha, Hoyle, & Oe H, 2002; Williams, et al., 2004, 2007;), and these findings are similar to Williams, et al. (2010) which suggested that whether it is used for military personnel generally or specifically for combat-wounded veterans, Stress Gym maintains its utility. This study and previous studies provide evidence that Stress Gym is a versatile tool.

Significance of Study or Project Results to Military Nursing

Stress Gym supported the efficacy of a well-designed, evidenced-based, Web-based, self-help intervention across all services and demographics.

Our paper "Design-Element Alternatives For Stress-Management Intervention Websites: Stress Gym", to be published in September 2011 in *Nursing Outlook*, departs from standard practice to suggest design elements which, based on user input and other evidence, can be used as a model for improving self-help, Web-based interventions to help military personnel manage stress and depression.

The RAND Corporation selected two earlier studies, BOOTSTRAP and STARS, in the program of studies that culminated in Stress Gym as case studies to include in their review of programs that addressed psychological health and traumatic brain injury (TBI) among military service members and their families.

Changes in Clinical Practice, Leadership, Management, Education, Policy, and/or Military Doctrine that Resulted from Study or Project

The BOOTSTRAP study was referred to, though not by name, by BG Cornum who was interviewed, along with Dr. Martin Seligman, in 2009 on National Public Radio (NPR 2009) on the creation of the Comprehensive Soldier Fitness initiative begun under Gen. George W. Casey, jr. (Ret.).

Stress Gym has revealed serious obstacles to the successful completion of military-research studies, especially psychosocial, multi-site studies, because of delays and other difficulties in IRB and related approval processes, such as for CRADAs, at military study sites that have nothing to do with to do with the protection of human subjects.

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Summary of Dissemination

Type of Dissemination	Citation	Date and Source of Approval for Public Release
Publications	Williams, R. A., Hagerty, B. M., Brasington, S., Clem, J., & Williams, D. A., (2010). Stress Gym: Feasibility of deploying a Web-enhanced behavioral self-management program for stress in a military setting. *Military Medicine, 175*, 487-493.	24 June 2008, TSNRP
	Hagerty, B. M., Williams, R. A., Bingham, M., & Richard, M. (2010). Military nurses and combat-wounded patients: A qualitative analysis of psychosocial care. *Perspectives in Psychiatric Care*. DOI: 10.1111/j.1744-6163.2010.00275.x.	June 2010, TSNRP
	Williams, R. A., Hagerty, B. M., Andrei, A-C., Yousha, S. M., Hirth, R. A., & Hoyle, K. S. (2007). STARS: Strategies to assist Navy recruits' success. *Military Medicine, 72*, 942-949.	Sep 2007, TSNRP
	Williams, R. A., Hagerty, B. K., Yousha, S., Horrocks, J., Hoyle, K., & Liu, D (2004). Psychosocial effects of the BOOT STRAP Intervention with Navy Recruits. *Military Medicine, 169*, 814-820.	Oct 2004, TSNRP
	Williams, R. A., Hagerty, B. K., Yousha, S., Hoyle, K., & Oe, H. (2002). Factors associated with depression in Navy recruits. *Journal of Clinical Psychology, 58*(4), 323-337.	Apr 2002, TSNRP
	Williams, R. A., Hagerty, B. M., Hoyle, K., Yousha, S., Abdoo, Y., Anderson, C., & Engler, D. (1999). Research from afar: Considerations for conducting an off-site research project. *Journal of Professional Nursing, 15*(5), 288-293.	Sep 1999, TSNRP

Publications in Press	Williams, R. A., Gatien, G., & Hagerty, B. M. (in press, est. 2011). Design-element alternatives for stress-management intervention Websites. *Nursing Outlook*.	14 June 2010, TSNRP
Published Abstracts		

Podium Presentations	Williams, R. A. & Hagerty, B. M. (2010). Stress Gym and implications for practicing nurses. Oakwood Health System. Dearborn, MI, May 6.
	Williams, R. A., & Hagerty, B. M. (2009). Program of Research in Stress and Depression. AMSUS, Panel, St. Louis, MO, November 2009.
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	Williams, R. A., Hagerty, B. M., Andrea, A. C., Yousha, S., & Hoyle, K. (2004). STARS Project: Strategies to assist Navy recruit success. AMSUS Annual meeting. Denver, Colorado, November 17.
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	Williams, R.A., Hagerty, B.M., Yousha, S., & Hoyle, K. (2001). Biopsychosocial effects of the BOOT STRAP Intervention in Navy recruits. Paper, ICN, Copenhagen, Denmark, June 10.
	Williams, R.A., Hagerty, B.M., Yousha, S., & Hoyle, K. (2000). Biopsychosocial effects of the BOOT STRAP Intervention in Navy recruits. Paper, AMSUS, Navy Research Symposium, Las Vegas, NV, November 7.
	Williams, R.A., & Hoyle, K. (2000). Biopsychosocial effects of the BOOT STRAP Intervention in Navy recruits. Paper, Joint Accession Group Symposium, Chicago, IL, September 13.
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	Williams, R.A., Hagerty, B.M., Yousha, S., & Hoyle, K. (1999). Biopsychosocial effects of the BOOT STRAP Intervention in Navy recruits: A preliminary report. Paper, AMSUS, Anaheim, CA, November 8.
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Web-based Programs	Williams, R. A., Hagerty, B. M., et al. (2009). *Stress Gym for Combat Casualty Patients*. Internet intervention program under testing. Williams, R. A., Hagerty, B. M., et al. (2007). *Stress Gym for Navy Sailors*. Ann Arbor, MI: Board of Regents, University of Michigan.
Funded Grants	Williams, R. A. (PI), Hagerty, B. M. "Stress Gym for Combat Casualty Patients." (2006-2011). TriService Nursing Research Program, Department of Defense, TSNRP #N06-P16, HU0001-06-1-TS11 $743,995, 9/1/06-8/30/11. Williams, R. A. (PI), Hagerty, B. M., & Williams, D. "FICS for Sailors: An Intervention Study." (2004-2007). TriService Nursing Research Program, Department of Defense, $500,000, 5/1/04-4/30/07. Williams, R. A. (PI), Hagerty, B.M., Yousha, S., & Hoyle, K. (Co-Is), "STARS Project: Strategies to assist Navy recruit success." (2001-2004). TriService Nursing Research Program, Department of Defense, TSNRP # N01-002, MDA 905-01-1-TS01,$450,000, 7/15/01-7/14/04. Williams, R.A. (PI), Hagerty, B.M., & Hoyle, K. (Co-Is), "Biopsychosocial effects of the Boot Strap intervention with Navy recruits." (1998-2001). TriService Nursing Research Program, Department of Defense, TSNRP #N98-054, MDA 905-98-0026,$485,175, 7/1/98-6/30/01. Williams, R.A. (PI), Hagerty, B.M., & Hoyle, K. (Co-Is), "Supplemental funding for factors associated with onset of depression in Navy recruits." (1997-1998). TriService Nursing Research Program, Department of Defense, $9,000, 9/1/97-8/31/98 (supplemental funds). Williams, R.A. (PI), Hagerty, B.M., & Hoyle, K. (Co-Is), "Factors associated with the onset of depression in Navy recruits." 1996-1998). TriService Nursing Research Program." Department of Defense, TSNRP #N96-048, MDA 905-96-Z-0025, MDA 905-96-Z-0025, $200,000, 9/1/96-8/31/98.

Reportable Outcomes

Reportable Outcome	Detailed Description
Applied for Patent	None.
Issued a Patent	None.
Developed a cell line	None.
Developed a tissue or serum repository	None.
Developed a data registry	None.

Recruitment and Retention Table

Recruitment and Retention Aspect	Number
Subjects Projected in Grant Application:	225
Subjects Available: Unknown; Potentially all nurses and combat casualty patients at the 4 MTFs.	Unkwn
Subjects Contacted or Reached by Approved Recruitment Method:	129
Subjects Screened:	NA
Subjects Ineligible:	0
Subjects Refused:	0
Human Subjects Consented:	129
Subjects Who Withdrew:	0
Subjects Who Completed Study: 129, 124 nurses, 5 combat –wounded patients	129
Subjects With Complete Data:	NA
Subjects with Incomplete Data:	NA

Demographic Characteristics of the Sample

Demographic and Background Characteristics of the Nurses (N=124)

Variables	BAMC	NNMC	WHMC	WRAMC	Test
Sex Male % (n)	38.9% (7)	16.9% (11)	28.0% (7)	57.1 (8)	X^2 (3) =11.1, ***p=.011***
Female % (n)	61.1% (11)	83.1% (54)	72.0% (18)	42.9% (6)	
Education					
Some college	5.9% (1)	1.6% (1)	0.0% (0)	7.7% (1)	X^2 (4)=164.6,
Associate degree	11.8% (2)	4.8% (3)	4.3% (1)	0.0% (0)	*p=NS*
Bachelor degree	47.1% (8)	54.0% (34)	43.5% (10)	76.9% (10)	
Master's degree	29.4% (5)	38.1% (24)	47,8% (11)	15.4% (2)	
Doctorate	5.9% (1)	1.6% (1)	4.3% (1)	0.0% (0)	
Ethnic/Race					
African-Amer.	11.1% (2)	11.1% (7)	4.5% (1)	42.9% (6)	X^2 (4) =25.1, ***p=.014***
Asian-Amer.	0.0% (0)	6.3% (4)	18.2% (4)	7.1% (1)	
White	72.2% (13)	77.8% (49)	72.7% (16)	42.9% (6)	
Hispanic	16.7% (3)	1.6% (1)	4.5% (1)	7.1% (1)	
Other	0.0% (0)	3.2% (2)	0.0% (1)	0.0% (0)	
Age Mean (SD)	36.4 (10.9)	39.3 (13.1)	36.2 (12.7)	42.9 (11.3)	*F* (3,119)=1.1, *p=NS*
Mean Years as a Nurse	10.1 (10.5)	16.6 (10.8)	13.6 (7.2)	11.7 (13.1)	*F* (3, 110)=2.3, *p=NS*
Mean Years in the Military	11.2 (9.3)	15.1 (9.0)	13.6 (6.2)	10.7 (7.4)	*F* (3, 83)=1.4, *p=NS*
Mean number of deployments	1.1 (1.9)	0.6 (1.2)	0.9 (.88)	0.27 (.46)	*F* (3, 120)=2.4, *p =NS*

Combat-Wounded Patients. There were 5 combat-wounded patients who participated in the study, which limited the analysis possible. There were 3 male and 2 female patients, whose ages ranged from 24 to 42. One patient did not answer all the demographic questions, therefore the mean age of the four patients was 35.3 (SD=17.2). All indicated they were on active duty. They had been in the military service on average for 14.5 years (SD=6.7). One patient was single and two were married. Their ethnic/racial background was one African-American, one Caucasian, and two Other. They were all from the U.S. Army, with 3 officers (rank Captain to Major; 0-3, 0-4) and one enlisted (E-4). One had completed some college, and the others had completed college.

Final Budget Report

Budget Table

CATEGORY	ORIGINAL AWARD	EXPENSED TO DATE	REALLOCATIONS	PROJECTED EXPENSES TO END OF STUDY	REMAINING ACMOUNT
PERSONNEL	$431,313	$466,797			($35,484)
CONSULTANT	$18,000	$127			$17,873
EQUIPMENT	$0	$0			$0
SUPPLIES	$11,035	$2,415			$8,620
TRAVEL	$13,500	$4,509			$8,991
PATIENT CARE COSTS	$0	$0			$0
OTHER EXPENSES	$246,401	$246,401			$0
TOTAL	**$720,249**	**$720,249**	**$0**	**$0**	**$0**